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GEOGRAPHIC SCHOOL BULLETINS

Published Weekly by

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Carl Normann

NORWAY'S SMILING FARM MAIDS REWARD A FAITHFUL FJORD HORSE

This gentle, sturdy, dun-colored little animal is as typical of Norway as are the fair-skinned girls and the hay strung over poles to dry. Favorite of all Norwegians, the agile fjord horse earns his keep many times over by willingly doing field and draft work on Norway's rocky farms and steep, zigzag roads. He is unlike any other breed of horse. It is not known whether he migrated overland from Asia to the fjords, or if Norsemen centuries ago brought a shipload of his ancestors from overseas. Proximity to the sea has made Norway a land of seafaring men throughout its history, but farming has always been the main livelihood of the stay-at-homes (Bulletin No. 3).

GEOGRAPHIC SCHOOL BULLETIN

HOW TEACHERS MAY OBTAIN THE BULLETINS

The Geographic School Bulletins are published weekly throughout the school year (thirty issues) and will be mailed to teachers in the United States and its possessions for one year upon receipt of 25 cents (stamps or money order); in Canada, 50 cents. Originally entered as second-class matter January 27, 1922; re-entered as of April 27, 1943, Post Office, Washington, D. C., under Act of March 3, 1879. Copyright, 1945, by National Geographic Society, Washington 6, D. C. International copyright secured. All rights reserved. Quedan reservados todos los derechos.

The Bonin Islands, Site of Jap Pearl Harbor

THE Bonin Islands (Ogasawara Gunto), Japanese outpost 575 miles south of Tokyo repeatedly bombed by United States planes, are a sort of Jap miniature of the United States' Hawaiian Islands. Like the Hawaiian group the Bonins even have a Pearl Harbor—a major naval base protecting Tokyo on the south and east.

Aggregating about 30 square miles, of which the largest island, Chichi Jima, comprises one-third, the Bonins are bold and rocky, rising precipitously from the sea. They lie north of the northeast trade winds and east of the monsoons, but occasionally they catch the tail end of storms.

Although the position of the Bonins just north of the Tropic of Cancer takes them out of the "tropics," their fine volcanic soil produces luxuriant vegetation. Like the Hawaiian Islands, just south of the Tropic of Cancer and hence, strictly speaking, tropical, the Bonins' chief crops are sugar cane, pineapples, and bananas. Turtles and fish are caught in the surrounding waters. Palms grow on the lower slopes near the shores of the islands. Mulberry trees and ferns attain great size. In prewar years the islands supported about 6,000 people.

The Bonins Once Had English Names

Until recent centuries the 27 islands of the Bonin group were covered with jungle growth and uninhabited. The name Bonin is an English corruption of the Japanese word *munin*, meaning "uninhabited." Individual islands of the group bear the designations of members of a family. Chichi Jima means "father island." Near-by Haha Jima (illustration, next page) is "mother island." Named for other relatives are Ani (elder brother), Ototo (younger brother), and so on down to niece and nephew.

The islands once had English names. Futamo Ko, the deep harbor which makes a major naval base possible on Chichi Jima, was first named Port Lloyd after a Bishop of Oxford. Haha Jima had, successively, Spanish, American, and English names before the Japanese labeled it.

The Bonins have had several masters as well as several names. They were first sighted by the Spaniard Villalobos in 1543. Fifty years later the Japanese discovered them. In 1823 an American whaler touched at Haha Jima. Four years later came the British, who claimed all the islands for King George IV. In 1853 Commodore Matthew Perry of the United States Navy took formal possession of the southernmost cluster which the British had called the Bailys. He renamed it Coffin after the American whaler captain who had discovered it 30 years before.

Commodore Perry Bought Site for Coaling Station

In 1830 a group of colonists made up of Americans, Europeans, and Hawaiians left Hawaii to settle in the Bonin Islands. This expedition was sponsored by the British consul at Honolulu. However, Americans in the group never gave up the hope that the United States would eventually claim the islands by right of prior discovery. Other settlers, most of them brought by British whalers and men-of-war, followed the 1830 expedition.

In 1853, Commodore Perry, on his way to Tokyo to open Japanese ports to the world, stopped at the Bonins. He conferred with the American governor of this British colony, and bought, in his own name, land on the water front best

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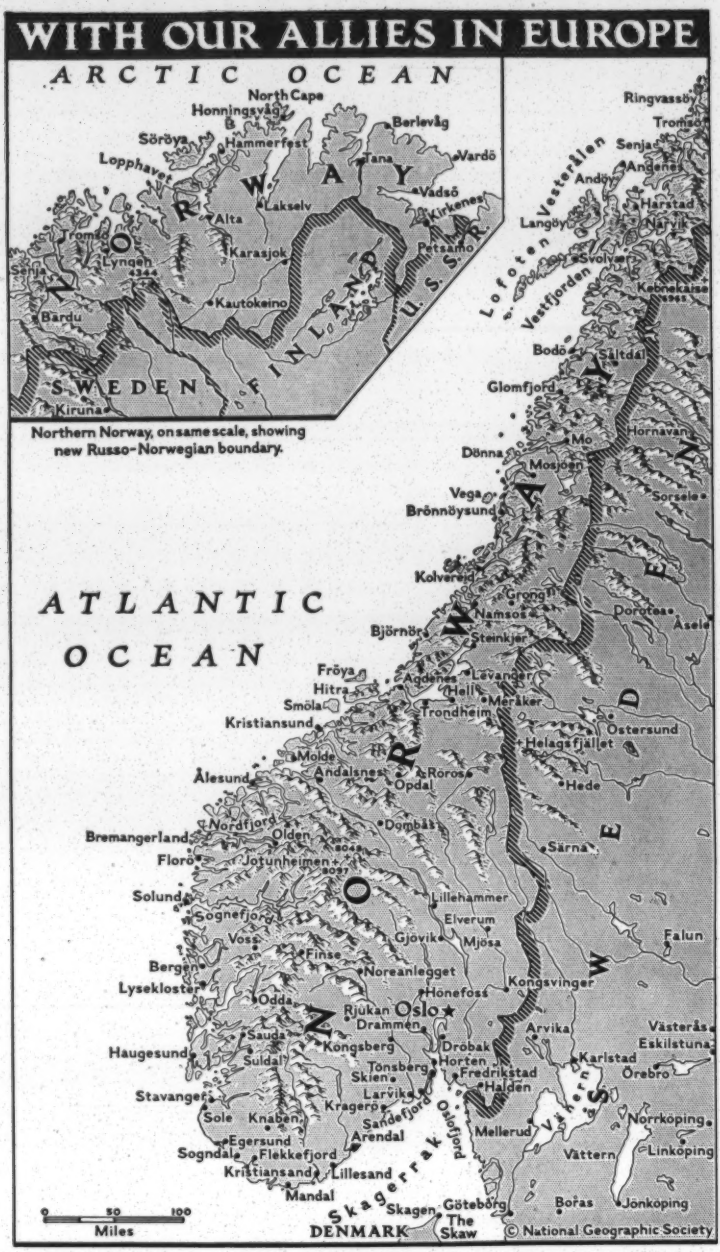

NORWAY'S FJORD-SLASHED COAST RIMS SCANDINAVIA'S ATLANTIC SHORES

Lace-edged with jagged, rock-cliffed fjords and outlying groups of islands, long, slim Norway curves past Denmark's tip to the south, bulges into the Atlantic, and stretches north to the Arctic. This only Atlantic country of the Scandinavian Peninsula tapers to a mere sliver as it nears the Arctic. Swinging around the northern limits of Sweden and Finland, Norway's coast line meets the Soviet Union's westernmost Arctic point (Bulletin No. 3).

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General Headquarters, Washington 6, D. C.

St. Dié, Now in Yank Hands, Gave America Its Name

AMERICAN forces, in the recent drive through the Vosges Mountains to the Rhine, captured the place that made them Americans—the inconspicuous little French town of St. Dié.

There, at the College of St. Dié, near the beginning of the 16th century, Martin Waldseemüller, a geographer, first traced the name "America" on the map (illustration, next page). Later he changed his mind; but the name stuck.

Born at Freiburg, Germany, about 1480, Waldseemüller was inspired by the land discoveries of Columbus' day to revise the ancient atlas of Ptolemy.

Good Publicity Immortalized Vespucci's First Name

In 1507 the St. Dié staff published separately a large wall map of the world in twelve sections, measuring 8 by 4½ feet, and a 52-page "Introduction to Cosmography" by Waldseemüller. Letters written by Amerigo Vespucci (Americus Vespucius), volubly describing his voyages, had been turned over to the St. Dié scholars only a short time before the map and treatise were published. One theory is that the letters were a hoax perpetrated by an unscrupulous publisher.

The name "America" appeared on the vague land mass drawn at the left-hand edge of the map to represent the new continent. In his pamphlet, Waldseemüller observed: ". . . I do not see what is to hinder us from calling it Amerige or America . . . after its discoverer, Americus, a man of sagacious mind, since both Europe and Asia have got their names from women."

In seeking to name the new-found land for a man, the St. Dié geographer overlooked not only Columbus but also John Cabot, English navigator likewise generally credited with reaching mainland America ahead of Vespucci. Columbus never claimed discovery of a new continent; he died in 1506 still believing he had merely reached Asia by a new route.

Vespucci, however, did claim to have found a new continent and obviously his controversial exploits were made known in the right places.

National Geographic Society First Exhibited Famed Map in America

Probably 1,000 copies of the map, printed from woodcut engravings, were distributed to all parts of Europe. On a revised map published in 1516, Waldseemüller showed that he felt he had unjustly credited Amerigo Vespucci by substituting for America the name "Brazilia sive Terra Papagalli" (Brazil or the land of parrots). But the Old World had already taken to the name America.

Several European and some American libraries have copies of the original 1507 pamphlet. The copies of the map, because of the difficulty of preserving them, were in time destroyed or lost. The news late in 1901 of the discovery of a copy in the library of a German ducal castle excited world interest. This original was exhibited in America for the first time at a meeting of the National Geographic Society in Washington, December 18, 1903.

St. Dié, today a town of 15,000 people, lies in the upper basin of the Meurthe River surrounded by the Vosges Mountains, at the center of a triangle formed by Nancy, Strasbourg, and Belfort. To Martin Waldseemüller it was a refuge. His father, a prosperous butcher of Freiburg, had met a violent death and the son had sought a new home.

Note: St. Dié is shown on the Society's Map of Germany and Its Approaches.

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adapted for a naval coaling base.

Nothing came of Perry's foresightedness. Eventually the Japs built their naval base on the spot he chose. While the Civil War kept United States' attention occupied at home, the Japanese, ignoring other claims, moved a large colony onto the islands. They changed the name of the group to Ogasawara in honor of the 16th century Japanese discoverer.

This colony failed because rice, the staple food of the Japs, could not be grown. All but a few families returned to Japan.

The original Bonin Islanders again had their lush Pacific Paradise to themselves. Their second generation was growing up into a mixed race composed of English, American, Polynesian, Spanish, Japanese, Malay, and Italian strains.

In 1875 the Japs came back to the islands to stay. After 20 years they numbered 5,000. Some of the original settlers left. Others accepted absorption into the Japanese system. Through intermarriage with the usurpers, English and American blood is spread thinly over all the islands of the group.

Note: The Bonin Islands are shown on the National Geographic Society's Map of Japan and Adjacent Regions, which was a supplement to the April, 1944, issue of the *National Geographic Magazine*. A price list of maps may be obtained from the Society's headquarters, Washington 6, D. C.

See also, "Springboards to Tokyo," in the *Magazine* for October, 1944; "Japan and the Pacific," April, 1944; and "Hidden Key to the Pacific," June, 1942*. *(Issues marked with an asterisk are included in a special list of Magazines available to teachers at 10¢ each in groups of ten.)*

Bulletin No. 1, January 15, 1945.

Arnold Arboretum

HAHA JIMA'S RUGGED COAST IS NO LAUGHING MATTER FOR LANDING CRAFT

Mountains rising directly from the sea comprise the west coast of rocky Haha Jima (mother island), second largest of the Bonin Islands. The English named it Hillsborough Island decades before the Japanese colonized the group only 575 miles south of Tokyo. Nearly one-third as high as it is wide, Haha Jima reaches altitudes of 1,515 feet. It measures eight miles long by one mile wide. Three small ports are served by open harbors too shallow for ocean-going vessels. The cleared field on the steep hillside recalls Japan's crowded, mountainous homeland, where every available square yard must be tilled.

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General Headquarters, Washington 6, D. C.

Allies in Europe: 2. Norway

(This is the second of a series of bulletins about countries where Allied forces are operating or may operate.)

IT IS a long way from southern Yugoslavia to northern Norway, but our Russian allies man a battle line that includes both regions. After Finland surrendered, the Soviet Army drove the Germans across the narrow Petsamo district into Arctic Norway, and went on to liberate its first town—Kirkenes.

A Norwegian patriot army trained in England joined the Russians. Poised at the farthest north extremity of lengthy Norway, these two allies look south toward Narvik, Trondheim, Bergen, and Oslo, seat of the Nazi's Norwegian puppet government.

Norway is a land of small rocky farms (illustration, next page) and of inhospitable rock-bound coasts dotted with fishing villages. It is a unified, freedom-loving country where a scant three million Norwegians have stubbornly resisted the Nazi hordes for nearly five years.

Norway Became a Modern Sovereign Nation in 1905

Coastal villages are separated from each other by reaches of stormy seas and the precipitous cliffs of fjords cutting deep inland (map, inside cover). Farmers are often isolated in narrow valleys, shut off from neighbors by roadless mountains or wide fjords. These geographic conditions have tended to make the Norwegians self-reliant, resourceful, and hardy.

The thunder of the Viking age died down about 1050. When the line of Norway's kings expired in the 14th century the country was united with Denmark. After the Napoleonic wars Denmark ceded Norway to Sweden, keeping the Norse colonies of Iceland and Greenland. In 1905 Norway and Sweden separated, and Norway became a sovereign nation once again.

The Atlantic, rimming the country on its west, south, and southeastern borders, binds Norway together, giving its people a feeling of unity. The Atlantic and Arctic oceans are highways rather than barriers to the fearless Norse sailor. Until recently they were far easier to travel than the rugged shores they wash. Protected by the "skerry-guard" of 150,000 islands, the ancient Northern Way followed the coast, and gave Norway its English name.

The Vikings in dragon-prowed ships terrorized all western Europe within reach of tidewater. But, strangely enough, where they settled they firmly planted their genius for law and order. They settled on the Shetlands and the Faeroes, the Orkneys and the Hebrides, in northern Scotland, parts of Ireland, and on the Isle of Man. Vikings discovered North America almost five centuries before Columbus. They carved a section out of France—Normandy—and ruled it so well it became strong enough to conquer England.

The Gulf Stream Keeps Ports Ice-Free

Reviving Norse mastery of the sea, Norway had a merchant marine at the start of World War II ranking fourth in the world, with the world's largest per capita tonnage. Only Great Britain, the United States, and Japan had larger merchant fleets than small Norway. In World War I, though neutral, she lost half her tonnage, a greater percentage than any belligerent.

The sea provides the Norwegians' food staple—fish—and the largest item of the country's export trade—fish and by-products. Every prewar winter, 12,000 boats pulled in 800,000 tons of cod and herring in the Lofoten area, off the northwest coast. An early Commando raid was made on Lofoten fish-oil factories whose output Germany used in munitions-making.

The Gulf Stream increases the ocean's value to Norway. The tropic-warmed waters which it carries along most of the coast temper the climate to an amazing degree. All Norway's ports are ice-free the year round. Greenland, northern Alaska, Kamchatka, and other lands in the same latitudes as those of northern Norway, are icebound and almost uninhabited wastes.

Oslo (250,000), the capital, in southeastern Norway, lies on the 60th parallel of latitude which also crosses Greenland's southern tip, the north part of Labrador, and runs well north of the Aleutians. Hammerfest, 11 degrees farther north—Europe's northernmost town—is only slightly colder in winter than the Ukraine, in the latitude of northern France.

Inland from the fjord-indented coast, which if straightened out would half encircle the globe, mountainous Norway resembles Switzerland. Less than 4 per cent of the land can be cultivated, but more than one-third of the people make a living by farming and lumbering. Farmers cultivate every possible foot. Some farms above fjords or on mountainsides can be reached only by zigzag paths. Hay is lowered by cable from fields on cliff-side ledges.

In the broad valleys north of Oslo the country's richest farms produce grains, hay, and

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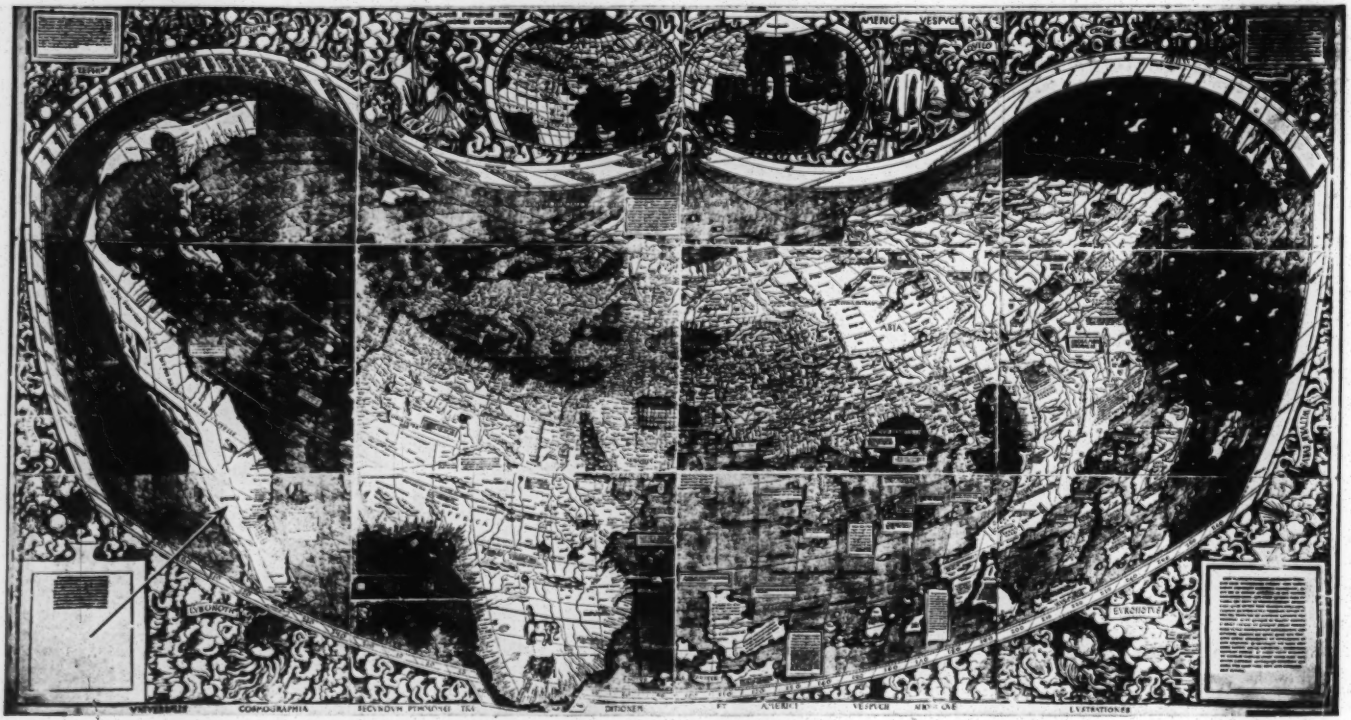

A SUPERIMPOSED ARROW (LOWER LEFT) POINTS TO "AMERICA" ON THE FIRST MAP TO USE THE NAME

On this 1507 chart, St. Dié scholars caught the general outlines of the world we know rising from the mists of the Middle Ages. The map reveals the comparative accuracy of 16th century cartographers when dealing with the close-at-home areas of Europe, Africa, and west Asia. The age of exploration had not yet enlarged the map-makers' horizon sufficiently to enable them to chart correctly the Americas, south and east Asia, the Indian Ocean, and the Pacific Ocean.

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Farm Machines Free Manpower for War Work and Peacetime Progress

FOOD problems during the present war have been largely taken care of, despite labor shortage, by extensive improvements made to at least a dozen agricultural machines since the first World War. Though production of farm machinery in the United States is 25 per cent behind schedule, mechanized agriculture has continued to fill the country's immense larder.

The doubling of efficiency of such implements as corn pickers (illustration, next page) and ensilage cutters recalls the great debt that modern society, warring and at peace, owes the American inventive genius that developed labor-saving devices for farmers.

During the first World War, the production of farm tractors increased more than tenfold. Under the slogan, "Food will win the war," 50 million bushels a year was added to the nation's wheat crop, in spite of inadequate farm labor. Much of the surplus went to allied nations.

Reaper Released Regiments, Helped Preserve Union

When the Civil War was raging, half the crops would have been left standing in the North but for agricultural machines to do the harvesting. The number of reapers manufactured to offset the enlistment of farm labor more than tripled.

"The reaper is to the North what slavery is to the South," said Lincoln's Secretary of War, Edwin M. Stanton. "By taking the places of regiments of young men in the western harvest fields, it releases them to do battle for the Union at the front, and at the same time keeps up the supply of bread for the nation and the nation's armies. Thus without McCormick's invention I fear the North could not win, and the Union would be dismembered."

During the long periods of peace, when the nation beat its "swords into ploughshares" and its "spears into pruning hooks," United States inventors were doing more than that. In building machines that did the work of a dozen or a hundred men, they paved the way for the country's great industrial strides by providing manpower for factories.

In pre-machine days, when it took three-fourths of the country's manpower to feed the nation, there was little labor for industrial plants. Today, with the aid of farm machinery, approximately one-fourth of the people formerly employed on farms can keep the national pantry filled. In the past hundred years, half of the nation's manpower has thus been gradually released to industry.

Also, increased agricultural production due to machinery has provided the United States with ever-increasing volumes of food for export. In the human-power era the country could barely feed itself.

Chronic Hunger Was Man's Lot Before Farm Inventions

In 1820, approximately 83 per cent of the gainfully employed population of the United States was working on farms. By 1930, only 21 per cent of that group was engaged in agriculture.

Up until 1800, farming methods had remained much as they had been in the days of Julius Caesar, and humanity continued to suffer from inadequate food supplies. Hunger and undernourishment were the daily lot of the average man. In Europe the black bread staple was supplemented by herbs, chestnuts, roots, tree

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potatoes. Much of the crop is used for animal feed. Half the wheat consumed was imported.

Most of Norway's farms are small, averaging about 9 acres. They are nearly self-sufficient units, many supporting large families (illustration, cover). Most farms have two or three *seters*, plots of pasture land far from the farmstead on high mountain slopes. Herds are taken there in summer. The *seter* house is a rough structure built to shelter the dairymaids, and with equipment for making butter and cheese.

Oslo, Bergen, and Trondheim are the only cities with over 50,000 people. They stand on fjords along the coast and are connected by railways and highways. Oslo, the capital, is very modern. Bergen, center of fish exporting, looks like the medieval German trading post it once was. Trondheim, the ancient capital, has wooden architecture typical of smaller towns.

Manufacturing, which supports almost one-third of the people, includes lumber processing and fish canning. Norway's forests produced a great amount of wood pulp, most of which was exported to Great Britain. Norway has no coal except in Arctic Spitzbergen. The country relies on water power, and factories are often strung along narrow rural valleys.

Until recently northern Norway could be reached from the south only by steamer. Before the war a highway running the entire length of the country neared completion. Mo was the northern terminus of the rail system. A railroad from Narvik to northern Sweden's iron ore fields makes a roundabout rail connection with southern Norway through Sweden.

At North Cape, Norway's farthest-north tip, the sun remains above the horizon from the second week in May until the last week of July. In all Norway there is no complete darkness from the end of April to mid-August. However, the far north has a long winter night of ten weeks' total darkness. Oslo's shortest winter days have only six and one-half hours of sunlight.

Note: Norway is shown on the National Geographic Society's Map of Europe and the Near East, which was a supplement to the *National Geographic Magazine* for June, 1943.

See also, "Norway, an Active Ally," in the March, 1943, issue of the *Magazine*; "Country Life in Norway," April, 1939*; and "Life in a Norway Valley," May, 1935.

Bulletin No. 3, January 15, 1945.

Axel H. Oxholm

THE NORWEGIAN FARMER'S STABBUR IS BOTH PANTRY AND WARDROBE

Household storage space is no problem to the Norwegian farmer. The hand-carved *stabbur* combines the functions of pantry and wardrobe. With projecting upper story and overhanging eaves reminiscent of Switzerland, this storehouse is built of peeled logs which are given a coat of wood tar to protect them from the blustery Norwegian winter. The *stabbur* is built on stilts to keep out marauding rats, with a gap between doorstep and the door itself over which these pests cannot jump. In the windowless first story are shelves stacked with many cheeses and brightly painted boxes of cakes. From the rafters hang hams and sides of bacon, as well as special wooden household implements not in constant use. Above, in the loft, are stored wedding chests of linen, and extra garments—clothes kept for special occasions, and mittens, heavy boots, and other winter attire.

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Geo-Graphic Brevities

GERMAN DRIVE AGAIN SCOURGES 1914 AND 1940 BATTLE AREAS

THE year-end Nazi counterattack on the western front crossed territory in Belgium and Luxembourg often before favored by Germany in launching offensives. This time, however, the German drive was forced by United States Army concentrations into the near-mountainous center of the Ardennes upland, and was not allowed to take the easier, more level routes to north or south.

To the north, a narrow section of the Belgian-German frontier just west of Aachen offers a natural gateway for passage around the Ardennes highlands into the plains of north Belgium and France. Along this route, which follows the Meuse River system, are found such history-making Belgian cities as Liége and Namur, both in the forefront of action in this, as well as the first, World War.

Through this most-favored invasion gap, in 1914, the Germans launched the main force of their attack. The Kaiser's troops overcame Allied defenses along the Meuse River, which cuts across the entrance to the north Belgian plains. They silenced the forts of Liége, on the Meuse, and moved on to Namur, at the junction of the Meuse and Sambre rivers, where the Allies had prepared another stand. Loss of Namur to the Germans left the way open for the occupation of Belgium, the drive toward Paris, and the decisive Battle of the Marne.

Again, in the Nazi campaigns of the spring of 1940, the Germans attacked in and around the Belgian corridor north of the Ardennes. The Meuse defenses were overwhelmed, and Liége fell.

In the meantime, German forces from occupied Luxembourg were racing across the Ardennes upland in a drive similar to the year-end offensive. On May 14, 1940, they breached the Maginot Line near Sedan, along the southern foothills of the Ardennes. Allied troops which had been sent to defend Belgium found themselves cut off, north of the Belgian-French border.

The Ardennes region forms a part of a much larger upland area which extends far into Germany. Its wooded hills and narrow valleys cover about one-third of Belgium. It has a relatively light population density, but its borders, rich in coal, are lined with towns and cities. The northern edge of the uplift follows the nearly straight line of the Meuse and Sambre rivers. The southern boundary follows the Belgian border. Northern Luxembourg is also Ardennes country.

Note: The Ardennes upland is shown on the Society's Map of Germany and Its Approaches, which was a supplement to the *National Geographic Magazine* for July, 1944.

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LOCK ON ALUMINUM TREASURE CHEST OPENED BY CRYOLITE KEY

BUT for little-known cryolite, well-known aluminum might never have found its way into virtually every household and factory in the United States. Aluminum, most abundant of the earth's metallic elements, is made usable by a process employing cryolite.

All natural commercial cryolite comes from Greenland. It is mined near the town of Ivigtut, in a pit several hundred feet across, and about 200 feet deep.

Ivigtut, principal port on the Arsuk Fjord, had about 300 residents before the war. Situated on a bare hillside, it is a typically drab mining town. However, many of its homes have electricity and central heating. The income of the average

bark and leaves, sawdust, and blubber.

The change from iron-covered wooden plows to cast-iron plows had marked agriculture's chief mechanical progress in 18 centuries. Then, in 1837, the self-scouring steel plow made possible the cultivation of the rich, sticky prairie lands of the midwest. The iron plow had been efficient only in friable woodland soil.

Most of the farm machinery which has done so much to revolutionize the world's agriculture originated in the United States. The reaper was invented in 1831, the mower and threshing machine in 1834, the first combine in 1836. The time required to harvest an acre of wheat was reduced from 36 man-hours to less than 12. Planting time was likewise lessened by efficient grain drills, developed in the 1840's.

Today various labor-saving machines on U. S. farms are estimated to number in excess of ten million. Further, this same mechanization of farming methods has been extended to practically every land, through the export of American machines. Before the war, U. S. manufacturers exported approximately $125,000,000 worth of farm machines a year, a fourth going to Europe.

Farm implement factories in the United States, about 1,200 in number, have made a direct contribution to the war, turning out war machines and parts. Some of the larger factories have been engaged 75 per cent in war work.

Note: For information on the part farming and farm machines have played in the war, see "Farmers Keep Them Eating," in the *National Geographic Magazine* for April, 1943*; and in the issue for July, 1944, "Britain Fights in the Fields," and a series of 21 natural color photographs, "America Fights on the Farms."

Bulletin No. 4, January 15, 1945.

Bill Billotte

SUCH TIRELESS, GREEDY MACHINES DO THE WORK OF MILLIONS

Working at night under the beams of powerful lights, a Nebraska farmer catches up on his corn picking. Wartime manpower drains from the farm have made the nation realize the importance of labor-saving agricultural implements. Food production greater than ever before is made possible by machines that do more than the entire adult population could, if put to work on farms. Here, corn-picking attachments fastened to a speedy tractor which can run night and day make short work of a field of corn. This same tractor, with proper attachments, can plant corn, mow hay, furnish pulley power, pull combines and plows, and spray fruit trees.

miner exceeded the salary of the Danish governor of the island.

The mine is about 1,850 miles northeast of Philadelphia, on the great circle, but the distance ships travel in bringing the mineral to the Pennsylvania port is much greater. Prewar imports entering through Philadelphia's harbors had increased to 25,000 tons a year. In 1944, more than two billion pounds of aluminum was used in United States airplane and munitions plants alone.

An Oberlin College student, Charles Martin Hall, solved the problem of reducing aluminum ore to a metal usable in industry. In 1886 he discovered that alumina, the white, powdery aluminum oxide obtained from bauxite, would yield metallic aluminum when melted with cryolite. Working in the family woodshed, the 22-year-old student pioneered the electrolytic process that eventually reduced the cost of aluminum from $545 a pound to 20¢ a pound. The first aluminum produced by the new method was made by Hall over the fire of the kitchen stove.

Chemical analysis has disclosed that cryolite is a sodium-aluminum fluoride and can be made synthetically. Either natural or artificial cryolite can be used in producing aluminum. Natural cryolite has the appearance of hard-packed snow. It is a quartzlike substance that the Eskimos thought was a special kind of ice. They found they could melt it over a candle flame. Discovered by the Danes in 1794, it has also been used in making glass and enamel ware.

Note: See also "Metal Sinews of Strength," in the April, 1942, issue of the *National Geographic Magazine*.

Bulletin No. 5, January 15, 1945.

Philadelphia Inquirer

GREENLAND'S ICELIKE CRYOLITE MAKES WARPLANES LIGHTER, FASTER

Aluminum, most used lightweight metal, is separated from aluminum oxide (alumina) only after being dissolved in molten cryolite and shot through with electricity. Natural cryolite, the "ice rock," is mined in quantity only in Greenland, Denmark's icy Arctic island. Here, at Philadelphia, it is being transferred to railroad cars from Danish ships which brought it from Ivigtut, Greenland. Aluminum, which would be beyond man's industrial grasp if it were not for cryolite—natural or synthetic—makes up almost 80 per cent of the weight of the modern all-metal plane. Continuing improvements in aluminum alloys make today's planes ever lighter, stronger, faster.